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Commissioner for Patents

SN 09/526,441

File No.: 10442-4US JA/AD

December 8, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Kamran AHMED et al.
Serial No.:	09/526,441
Filed:	March 16, 2000
Title:	USER SELECTABLE HARDWARE ZOOM IN A VIDEO DISPLAY SYSTEM
Group Art Unit:	2672
Examiner:	Jeffrey A. Brier – Tel. N° (703) 305-4723
Agent of Record:	James Anglehart - Tel. N° (514) 847-4244

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Declaration

Sir:

I, **Lorne TROTTIER**, do hereby solemnly declare that:

(1) I am a citizen of Canada and President of Matrox Graphics Inc.

(2) I participated in the supervision of the design and development of the G400 and G400 Max for Matrox Graphics Inc.

(3) The capabilities of the G400 and G400 Max were announced to the public by May 10, 1999, as evidenced by the enclosed Press Release provided in exhibit A to this my declaration.

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(4) The G400 and G400 Max were released to the public by June, 1999 as evidenced by the enclosed review article provided in exhibit B to this my declaration.

(5) The G400 and G400 Max are products that include a graphic card and an associated driver that have the capabilities to perform a method of controlling a display controller system to provide a display surface zoom, the display controller system having a main surface in a frame buffer memory and output to a zoom display device, as per the preferred embodiment of the detailed description of the present application.

(6) The G400 and G400 Max products have the ability to receive user input defining coordinates of a frame portion within the main surface in the frame buffer memory. A resolution of the zoom display device is determined and an aspect ratio of the portion defined by the user input is adjusted to correspond to the resolution. The display controller system can be programmed to implement the display surface zoom to provide a full screen view of the portion on the zoom display device. In the display controller system, the portion of the main surface in the frame buffer memory is scaled. Converting the scaled portion of the main surface in the frame buffer memory into a display signal is also done in the display controller system. The display signal is output from the display controller system to the zoom display device.

(7) The G400 and G400 Max products have the ability to receive user input defining coordinates of a fractional portion of the main surface in the frame buffer memory to be scaled and displayed, the fractional portion being a non-integer fraction of the main surface of the frame buffer memory. A resolution of the zoom display device is determined and an aspect ratio of the portion defined by the user input is adjusted to correspond to the resolution. The display controller system is programmed to implement the display surface zoom to provide full screen view of the portion on the zoom display device. The portion of the main surface in the frame buffer memory is scaled. The scaled portion of the main surface in the frame buffer memory is converted into a display signal. The display signal is output to the zoom display device.

PAGE 15/27 * RCVD AT 12/8/2003 6:24:43 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729306 * CSID:514 286 5474 * DURATION (mm-ss):09-42

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(8) I have read and understood claims 1 and 21 in the pending application. All of the features present in these claims were working in the G400 and G400 Max products released to the public in June of 1999.

(9) I, the undersigned, declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C §1001 of the United States Code and that such willful false statements may jeopardize the validity of any patent issued for the above-referenced patent application.

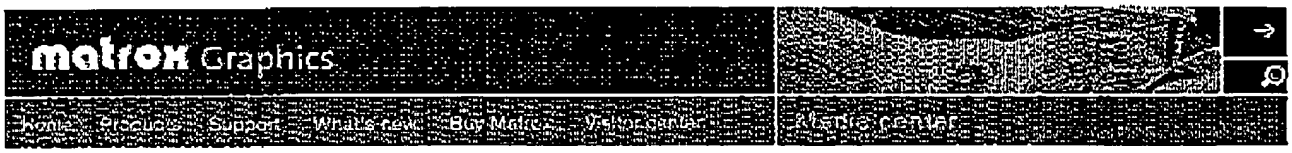
Lorne TROTTIER

By: Lorne Trottier Date: Dec. 8, 2003

PAGE 16/27 * RCVD AT 12/8/2003 6:24:43 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729306 * CSID:514 286 5474 * DURATION (mm-ss):09-42

Exhibit A of Declaration by Lorne Trottier

December 8, 2003



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Matrox launches dramatically different products: The Matrox Millennium G400 and Millennium G400 MAX

Highest speed graphics boards poised to revolutionize how people use their computers

Montreal, Canada - Matrox Graphics Inc. today announced the first 2D, 3D, video, TV-Out and dual display graphics boards[i] based on the Matrox G400 Chip Series: the high speed Matrox Millennium G400 for the most demanding business and home users; and the industry's benchmark leader, the Matrox Millennium G400 MAX, for power gamers and professionals requiring maximum resolutions for high-end displays.

"The Millennium G400 and Millennium G400 MAX offer the highest levels of speed in the industry combined with a dramatically different feature set," said Dan Wood, Senior Product Manager, Matrox Graphics Inc. *"Add a second display to your PC with Matrox's unique DualHead Display. Enhance the visual realism of 3D gaming with built-in hardware support for DirectX™ 6 Environment Mapped Bump Mapping. Enjoy the richest, most photorealistic colors with Matrox's Vibrant Color Quality2 rendering—all on a single Matrox Millennium card."*

The Matrox Millennium G400 (Retail Version)
A powerhouse of breakthrough technologies and next-generation features, the Matrox Millennium G400 is outfitted with three unique, must-have features that distinguish it from all other graphics solutions: Matrox's DualHead Display, built-in support for Environment Mapped Bump Mapping and Matrox's trademark Vibrant Color Quality[2] rendering. It is also equipped with a 3D rendering engine that achieves amazingly fast single pass multi-texturing with 32-bit rendering, 32-bit textures, 32-bit Z-buffer with 8-bit stencil, and full AGP texturing. Fitted with a fixed 16 or 32MB of high-speed SGRAM, the Matrox Millennium G400 provides lightning fast, ultra-crisp displays with its 300MHz RAMDAC.

The Matrox Millennium G400 delivers stunningly realistic image quality in the most demanding business and home applications without compromising performance. Powered by the Matrox G400 chip, the Matrox Millennium G400 (16MB) achieves an impressive 198 million WinMarks at 1600 x 1200 resolution at 24-bpp on Ziff Davis' WinBench 99 Business[ii] and scores 920 on 3D WinBench99[iii]. The Matrox Millennium G400 (32MB) scores a high-velocity 200 million WinMarks at 1600 x 1200 resolution at 24-bpp on Ziff Davis' WinBench 99 Business[iv] and a blazing 960 on 3D WinBench99[v].

Available to end-users in mid-June 1999, the Matrox Millennium G400 16MB will sell for $149 ESP and the Matrox Millennium G400 32MB for $199 ESP.

The Matrox Millennium G400 MAX (Retail Version)
The Matrox Millennium G400 MAX is also supercharged with the same three unique, must-have features that distinguish it from all other graphics solutions: Matrox's DualHead Display, built-in support for Environment Mapped Bump Mapping and Matrox's trademark Vibrant Color Quality[2] rendering. It is also equipped with a 3D rendering engine that achieves amazingly fast single pass multi-texturing with 32-bit rendering, 32-bit textures, 32-bit Z-buffer with 8-bit stencil, and full AGP texturing. Fitted with a fixed 32MB of high-bandwidth SGRAM, the Matrox Millennium G400 MAX provides lightning fast, ultra-crisp displays with a 360MHz UltraSharp RAMDAC capable of driving high-end monitors at resolutions up to 2048 x 1536, 32-bpp at 85Hz.

Targeted directly at the accept-no-compromise PC gamer and at professionals who require an exceptionally large desktop display, the Matrox Millennium G400 MAX gears performance into overdrive with an increase in raw speed of more than 30 per cent over the Matrox Millennium G400. In addition, the Matrox Millennium G400 MAX nearly maxes out Ziff Davis' 3D WinBench 99, scoring

1080[VI] at 1024 x 768 resolution at 16-bpp.

Available to end-users in mid-June 1999, the Matrox Millennium G400 MAX will sell for $249 ESP.

DualHead Display
DualHead Display will revolutionize the way people use Windows by supporting two independent displays with a single AGP graphics board. This technology allows users to personalize their computing environments with two RGB monitors, an RGB monitor and a TV, an RGB monitor and a digital flat panel[VII] or two analog Flat Panels. The DualHead Display functionality is made possible at a chip level with the Matrox G400 Chip Series' two internal Cathode Ray Tube Controllers (CRTCs), and at a board level with the two HD-15 connectors and S video/composite cable.

Combined with powerful productivity-enhancing features, DualHead Display allows users to view multiple applications in a variety of new display modes. In DualHead Zoom mode, users can zoom any region of their desktop to the second display, which is especially useful for graphics and design professionals who will use this feature for pixel-by-pixel retouching. DualHead Multi-Display mode unleashes the full power of a Windows desktop displayed across two screens; users can open different applications on each display for enhanced multitasking or extend one application across both displays for increased productivity and ease of use. In DualHead DVD-Max mode, end-users can output a video stream or DVD title full-screen to TV without losing their desktop on the primary display. In DualHead Clone mode, users can duplicate their desktop onto a monitor or projector for presentations and gamers can play a game on a big screen TV—unlike other TV-Out solutions, DualHead Clone does not lock the refresh rate of the primary display to the same refresh rate as the TV.

Environment Mapped Bump Mapping
The Millennium G400 and Millennium G400 MAX both support Environment Mapped Bump Mapping, dramatically enhancing the visual realism of 3D scenes with compelling details and special effects, as well as photorealistic real-time 3D. Supported under Microsoft's® DirectX® 6, Environment Mapped Bump Mapping can be used to create static, animated and procedural bumps for incredible special effects such as waves on the surface of water, thermal effects such as heat waves on hot asphalt, air turbulence, melting and morphing, embossing and basic bump surfaces. This feature has generated overwhelming support from developers for games that will ship in 1999, like Slave Zero from Accolade; Expendable from Rage Software; Messiah from Interplay/Shiny; Descent 3 from Interplay/Outrage; Drakan from Psygnosis/Surreal; and Speed Busters from Ubisoft.

Drivers and upgrades
Details regarding upgrades such as hardware M-JPEG video editing, TV tuning, digital Flat Panel output and hardware DVD will be announced at a later date.

Matrox offers support for Windows 98, 95 and 3.1x; Windows NT 4.0 and 3.51; and O/S 2. An OpenGL ICD driver is also included with Matrox Millennium G400 Series boards for high-quality 3D applications.

Software bundle
The Matrox Millennium G400 and Millennium G400 MAX offer users exceptional value with a software bundle that features popular titles for home and business. These include a software DVD player, MicroGrafx's Simply 3D 3 and Picture Publisher 8, and a hot 3D game, Expendable from Rage Software, which showcases Environment Mapped Bump Mapping.

About the Matrox G400 Chip Series
The Matrox G400 Chip Series delivers superior performance on a single .25 micron chip with a unique 256-bit DualBus architecture and as much as 32MB of high-bandwidth synchronous memory. Dramatically different from its competitors, the Matrox G400 Chip Series features Matrox's DualHead Display, allowing simultaneous output to two physically different displays. Fully OpenGL and DirectX® 6 compliant, this chip series advances 3D development and support with hardware Environment Mapped Bump Mapping for real-time special effects and never-before-seen levels of detail. Matrox's fast, full-featured 3D Rendering Array Processor and setup engine maximize

parallelism during 3D setup and rendering, allowing single cycle multi-texturing as well as set up of multiple triangles in parallel. Matrox's Vibrant Color Quality2 (VCQ2) rendering architecture preserves trademark vibrant color quality for cutting-edge, 32-bpp color in multi-textured software applications. In addition, the Matrox G400 Chip Series accelerates video effects in video editing solutions using Matrox's new Motion Video Rendering (MVR) architecture. Of the two chips in the series, the Matrox G400 features a 300MHz UltraSharp RAMDAC as opposed to the Matrox G400 MAX, which benefits from a 30 per cent increase in raw speed over the Matrox G400 and features a 360MHz RAMDAC.

About Matrox

A Montreal-based graphics chip designer and board manufacturer with international offices in the U.S., Great Britain, France, Germany, Italy and Hong Kong, Matrox Graphics Inc. is a leader in the graphics industry. In 1993, Matrox was the first to introduce a 64-bit graphics engine for the PC market with its MGA series and the first to introduce high-quality video editing to the consumer market with its breakthrough Rainbow Runner series in 1997. Over the past five years, Matrox's innovative graphics and video technology has been recognised with an unprecedented 550 international awards. With 23 years of experience, Matrox continues to deliver leading-edge solutions to the graphics and video industry at the best price and performance level.

May 10, 1999

i Retail versions only. Bulk products may differ in features and specifications.
ii The tests were performed without independent verification by Ziff-Davis. Ziff-Davis makes no representations or warranties as to the result of the tests. WinBench, 3D WinBench and WinMark are trademarks of Ziff-Davis Inc. in the US and other countries. Tests conducted on a 500Mhz Pentium III system with 128MB of 100Mhz SDRAM. Performance figures compiled using ZiffDavis 3D WinBench 99 run at 1024 x 768 x 16-bpp triple-buffered with 16-bit Z at 85Hz refresh under DirectX 6.1 and Ziff Davis WinBench 99 Business run at 1600 x 1200 x 24-bpp with a 75Hz refresh rate. The Matrox Millennium G400 16MB was configured with 16MB of SGRAM and the Matrox Millennium G400 32MB with 32MB of SGRAM. The Matrox Millennium G400 MAX was configured with 32MB of SGRAM. Display driver used for all tests was revision 5.10.
iii See above.
iv See above.
v See above.
vi See above.
vii Requires the Matrox Flat Panel daughter card.

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Exhibit B of Declaration by Lorne Trottier

December 8, 2003

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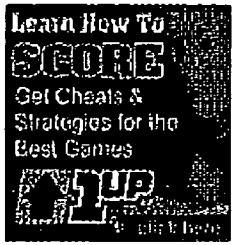

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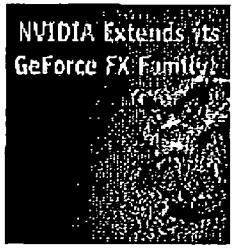
Graphics Cards

Review of the Matrox G400 MAX



DualHead Controls

The new DualHead feature of the G400 MAX required Matrox to include controls for it's extensive setup options. Matrox has provided some easy to configure options within their "DualHead Tab". This section is laid out in a very self-explanatory way.

Article Info

Review of the Matrox G400 MAX

Created:
June 28, 1999

By:
Silvino Orozco

Category:
Graphics Cards

Summary:
During these days of higher end consumer graphics cards, there are few cards that offer innovative graphical features

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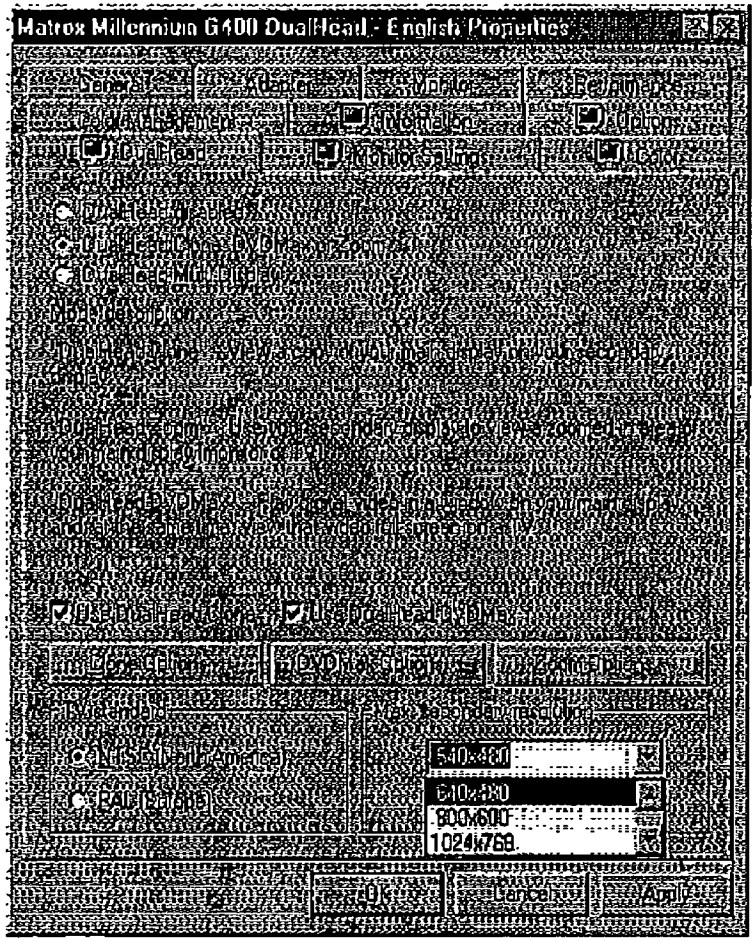

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PAGE 23/27 * RCVD AT 12/8/2003 6:24:43 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729306 * CSID:514 286 5474 * DURATION (mm-ss):09-42

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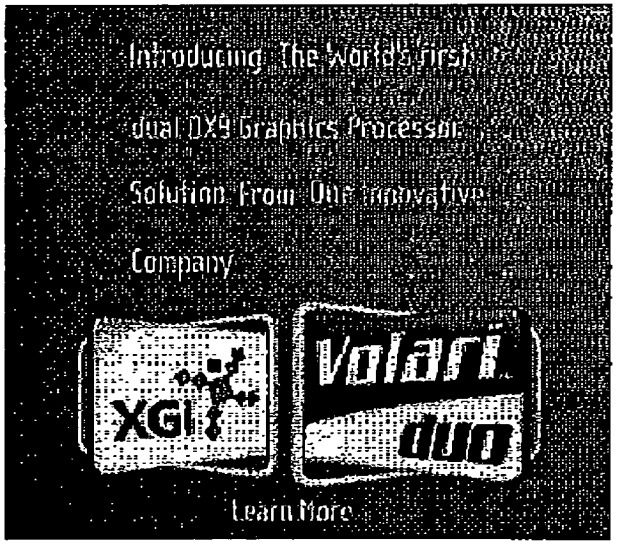

Within the DualHead configuration menu the user can select which mode they would like to take advantage of the G400 MAX DualHead features. In this menu there are options for selecting whether the user would like to use a second monitor or Television as their second video. In this section is also where you can enable the DVDMax options for viewing DVD titles on your TV. This nice feature allows the user to have full functionality of their computer desktop while viewing their favorite DVD title on the connected TV. The user can also setup their second display to clone their primary display. This would be handy for presentations. The presenter could view their presentation on their monitor while their audience could view the same presentation on the second display. And for those graphic artists, Matrox has also included the setup for their DualHead Zoom feature. This allows the user the ability to setup their second display as a clone display with a controllable zoom. Have you ever tried to manipulate an image in a zoom mode and have to change modes just to see what your changes look like? With the DualHead Zoom feature the user can view the normal sized image on their main display, while zooming in on the second display.

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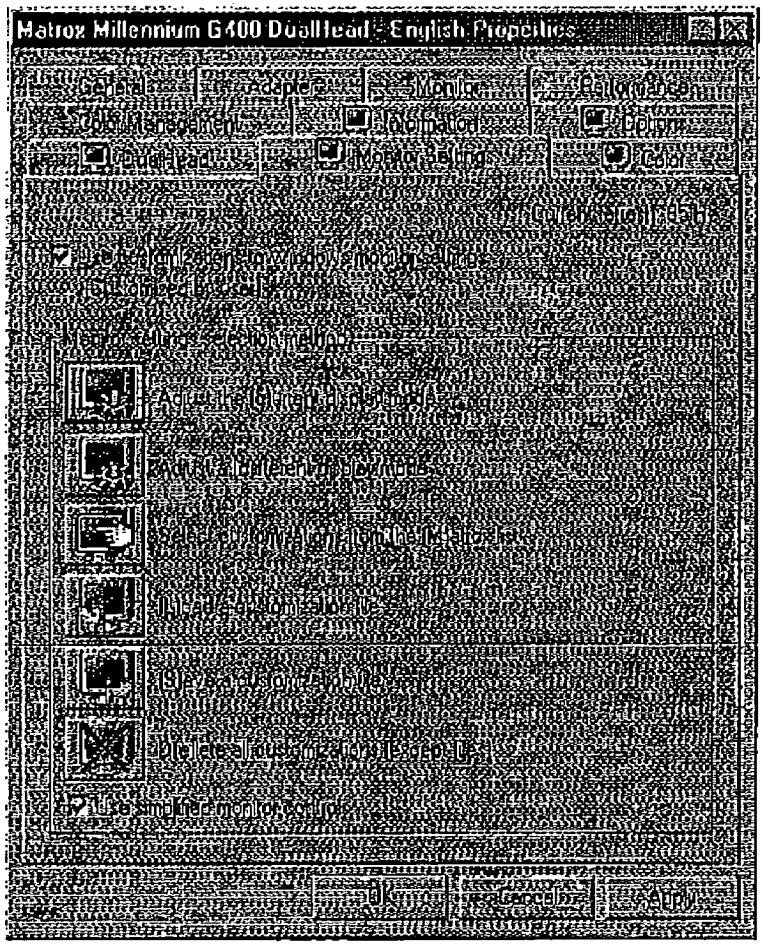

Instead of opting to use the built-in monitor selection and controls provided by the operating system Matrox decided to take control. In this menu the user can select a monitor from Matrox's extensive list of monitor models or create their own customized monitor settings for each resolution (e.g. refresh, and NTSC or PAL settings). If the user decides to customize their monitor settings they can save their options to a file in case they want to carry their settings to another G400 equipped system or have a backup of their settings stored away.

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PAGE 25/27 * RCVD AT 12/8/2003 6:24:43 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729306 * CSID:514 286 5474 * DURATION (mm-ss):09-42

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- G400 MAX Overview
- 32-Bit Z-Buffer - Does G400 do it or not?
- Screen Captures
- DualHead Feature
- Test System Configurations
- Matrox G400 MAX Drivers
- DualHead Controls
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